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SIGNED [Signature]

File No. A-68744/JGW

Box **PATENT APPLICATION FEE**

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

Transmitted herewith for filing is the patent application of Inventor(s): William John Jones; Michael Bowring

For: **USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS**

Enclosed are also:

Prior Art Statement

☒ 2 Sheets of drawing, Formal     , Informal X

☒ An Assignment of the invention to: IP Wireless, Inc.

Cost of recording to be charged to Deposit Account No. 06-1300 (Order No. A-68744/JGW)

Power of Attorney by Assignee & Exclusion of Inventor Under 37 CFR 1.32

☒ Combined Declaration and Power of Attorney for Patent Application

Declaration for Patent Application (unsigned)

Associate Power of Attorney

☒ Small Entity Status Declaration Under 37 CFR 1.9(f) and 1.27(c)

☒ Return postcard

	(Col. 1) NO. FILED	(Col. 2) NO. EXTRA	SMALL ENTITY RATE FEE		OTHER THAN SMALL ENTITY RATE FEE	
<b>BASIC FEE</b>				\$345		\$790
<b>TOTAL CLAIMS</b>	3 - 20 = 0	0	x 11 =	\$	x 22 =	\$0
<b>INDEP CLAIMS</b>	1 - 3 = 0		x 41 =	\$	x 82 =	\$0
<b>MULTIPLE DEPENDENT CLAIM PRESENTED</b>			+ 135 =	\$	+ 270 =	\$
If the difference in Col 1 is less than zero, enter "0" in Col. 2			<b>TOTAL</b>	\$345	<b>TOTAL</b>	\$

☒ Our Check No.                      in the amount of \$345.00 to cover the filing fee is enclosed.

     This is a continuation-in-part application under 35 U.S.C. 120/121 of U.S. Patent Application Serial No.                     , filed                     .

☒ The Commissioner is hereby authorized to charge any additional fees which may be required, including extension fees, or credit any overpayment to Deposit Account No. 06-1300 (Order No. A-68744/JGW.)  
Two copies of this sheet are enclosed.

Respectfully submitted,

[Signature]  
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Applicant or Patentee: WILLIAM JOHN JONES, et al. Attorney's Docket No.: A-68744/JGW  
Serial or Patent No.: \_\_\_\_\_ Filed or Issued: \_\_\_\_\_  
For: USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS**  
**(37 CFR 1.9(f) and 1.27(c)) - SMALL BUSINESS CONCERN**

I hereby declare that I am

☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: IPWIRELESS, INC. ADDRESS OF SMALL BUSINESS CONCERN: 1250 Bayhill Dr., #113, San Bruno, CA 94066

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled, USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS by inventor(s) WILLIAM JOHN JONES and MICHAEL BOWRING described in

☒ the specification filed herewith  
☐ application serial no. \_\_\_\_\_, filed \_\_\_\_\_  
☐ patent no. \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME: \_\_\_\_\_ ADDRESS: \_\_\_\_\_

☒ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING ROGER PHILLIP QUAYLE TITLE IN ORGANIZATION Chief

Technology officer ADDRESS OF PERSON SIGNING 1250 Bayhill Drive, #113, San Bruno, CA 94066

SIGNATURE RP Quayle DATE JULY 7 2000

1020304

## **USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS**

This is a continuation-in-part of application Serial No. 09/432,824, filed November 2, 1999, entitled "CELLULAR WIRELESS INTERNET ACCESS SYSTEM USING  
5 SPREAD SPECTRUM AND INTERNET PROTOCOL (IP)."

### **INTRODUCTION**

The present invention is directed to the use of Internet web technology to register wireless access customers.

### **BACKGROUND OF THE INVENTION**

- 10 The above application describes a cellular wireless Internet access system which operates in the 2 gigahertz or other frequency bands to provide high data rates to fixed and portable wireless Internet devices. Such users connect to near-by base stations which in turn communicate to Integrated Network Controllers which are then connected to the Internet. Such wireless implementation relates to an access network of the UMTS (Universal  
15 Mobile Telephone Service) and its subset UTRAN (Universal Terrestrial Radio Access Network) standards.

In order to gain service in a cellular wireless network of the types similar to the above, a sales representative at a retail location typically takes customer information, credit card number and credit history, etc. That information used to create an account with a cellular service provider, with the customer information stored on the service provider's Home  
5 Location Register (HLR) or other customer database. A SIM (Subscriber Identity Module) card is then associated with the account and placed within the cellular terminal (typically, a mobile phone or wireless Internet device).

Both of the above techniques are cumbersome, requiring action on the part of the retailer or network service provider, and creating a time delay before a new customer can use the  
10 service. It is therefore desired to allow the user to self-register to gain access to Internet services over the wireless system as above.

## OBJECT AND SUMMARY OF INVENTION

It is therefore an object of the present invention to provide a method for allowing a new customer in a wireless Internet system to self-register.

15 In accordance with the above object, there is provided a method of operating a cellular wireless Internet access system including registration of wireless Internet access users having a personal computer (PC) or similar device where each user utilizes portable wireless User Equipment (UE) typically with a directly attached antenna for communicating in a wireless manner with a cellular network controller, the method  
20 comprising the steps of the user acquiring the User Equipment along with magnetic storage means (CD) having predetermined software for use in registration. Next, the terminal is connected to the PC and the CD installed in the PC. A wizard in the predetermined software controls the PC and its connected wireless User Equipment.

Under the direction of the wizard in the PC, the User Equipment is commanded to  
25 communicate in a wireless manner with the wireless network. Because the customer has

not previously registered with the wireless access network operator, it is only permitted on the network as an anonymous subscriber and is permitted to communicate only with the network operator's registration web server. This is achieved by the use of a special 'new user' ID and password pre-programmed on the CD. A communication session is established between the PC, User Equipment and the network operator's registration web server (via wireless access), and credit card, other personal details and type of service required are entered. The registration web server contains a list of allowable ISPs that can be accessed on the system this list is used for subsequent accesses after registration has completed. The user enters a preferred User ID and if authorized by the registration server, the customer is allocated a User ID and Password; the same information is transferred to PC and the access network operator's Home Location Register (which contains the database of authorized customers). Thereafter, the subscriber is authorized to use the network and can establish normal connections on the wireless network and to allowable ISPs (Internet Service Providers) for an Internet session and access to any part of the Internet permitted by that ISP.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a block diagram of an Internet system illustrating the present invention.

FIG. 2 is a flow chart showing the operation of the invention.

## **DETAILED DESCRIPTION OF PREFERRED EMBODIMENT**

Referring now to FIG. 1, two users of the Internet access system are illustrated at 21 and 22 with User Equipments, known as User Equipment (UE), connected by a typical data connection to the computer using RS232, USB or Ethernet. The personal computer has a CD drive or similar media input device in which a special compact disk, or similar media, containing software including a wizard (that is, the instructional system procedures for registration) which is placed in the CD drive. Both the UE and CD are acquired and

purchased at some retail location or by mail. In any case, both the CD and the UE are at the location of the user.

The wireless access UE 21 and 22, as described in the above application, are a part of a UMTS/UTRAN system which by many wireless techniques (a specific novel one is described in the above application) communicates in a wireless manner via a UTRAN network as indicated by the symbol 23 to an Integrated Network Controller (INC) 24. Such controller may be connected by wireline or otherwise to an Internet Protocol (IP) Network 31. As discussed in the above pending application, the Integrated Network Controller 24 includes an RNC or Radio Network Controller 26 which controls and allocates the radio network resources and provides reliable delivery of user traffic between a base station (described in the above pending application) and User Equipment (UK) and eventually the Integrated Network Controller (INC) 24. An SGSN (Serving General Packet Radio Service Support Node) 27 provides session control and connection to the Access Operator Radius Authentication Server 34 and, lastly, LAC 28 (layer 2 Tunneling Protocol Access Concentrator) provides the gateway functionality to the Internet Service Providers (ISP) 40 and to the registration server. A Layer 2 Tunneling Protocol Network Server (LNS) 30 terminates communication tunnels from the LAC through the IP network. The Access Operator Radius Authentication Server 34 supports the Home Location Register (HLR) functionality (described in the above pending application). The Access Operator Registration Server 36 provides the facilities for a new user to register.

The Integrated Network Controller 24 also illustrates that it incorporates a "RADIUS" client 29. RADIUS is a system including the software that supports centralized access control for Internet access, which, as discussed above, is traditionally used where the access to the Internet is via the public switched telephone network. A description of RADIUS is provided by an article RFC 2138 Remote Authentication Dial-in User Service (RADIUS) by C. Rigney, et al., April 1997.

In all cases of communication of a user equipment 21 or 22 through the Internet Protocol Network, illustrated as 31, authentication is performed by the user equipment (UK) signaling the customer's wireless access authentication information which is passed over the air to Integrated Network Controller 24 which queries a RADIUS server authentication service with the user ID (identification) and temporary password. The RADIUS server used is the Access Operator's RADIUS Authentication Server 34 which communicates with the Integrated Network Controller via the IP network using UDP/IP protocols with additional protocol layers for security.

In the case of a new user, a 'new user' ID and temporary password, preprogrammed in the CD software, is signaled to the Access Operator RADIUS Authentication Server 34 via the INC 24. The Access Operator RADIUS Authentication Server 34 recognizes the user as a 'new user' and communicates a set of protocol filters to the INC 24 that results in a PPP (Point-to-Point Protocol) session being set up between the User's PC and the Access Operator's Registration Server 36 via the Layer 2 Tunneling Protocol communication link 32 and bars the user from accessing any other service. The Access Operator's Registration Server 36 is connected to the subscriber account management and billing system 37.

Thus, the foregoing constitutes the anonymous session link where a general or non-authenticated user can still gain access to the wireless access operator's registration server for the purpose of new-user registration. The accompanying legend indicates the various paths. A UMTS access network operator 33 provides the special servers 34 and 36 along with the billing system 37.

The flow charts of FIG. 2 aptly describes the operation shown in the block diagram system of FIG. 1. After Start, in Step 1, the user purchases the equipment, which has been defined as the User Equipment (UK) and a CD with the appropriate software and wizard procedure installed on it. A manual is also provided. The CD also contains, besides the installation software, the required software drivers. The user residence when the user

purchases the foregoing may be checked for coverage via use of the user's zip code or other geographic information. This information can all be provided by Internet web access.

In Step 2, the User Equipment is connected to the PC. This connection can be USB,  
5 Ethernet, RS 232, etc., as illustrated in FIG. 1.

In Step 3, the User Equipment is installed on the PC. This is done through the wizard software and will support all the connection interfaces specified; that is, the RS 232, USB or Ethernet. Steps 3a and 3b are precautionary checks. In Step 3a, the UE installation  
10 software checks that the modem is connected correctly and operational. If no return is made because of a failed installation process, designated by the A, a cell search is performed in the next Step 3b. Here, the User Equipment received signal quality is measured and reported to the user via the installation wizard. Again, if the quality of the signal fails, a return is made to Start. In effect, registration will not be possible.

In Step 4, the user's PC, using standard "attention" (AT) modem commands, sends new  
15 user ID and temporary password to the UE. Then in step 5 the UE sends this authentication information over the air to the RNC 26 which is passed onto the Radius Client 29 and the SGSN 27 which, queries the RADIUS server 34 with the "new user" ID and temporary 'new user' password. In step 6 the RADIUS server 34 responds with acceptance plus a set of protocol filters to be applied in the SGSN 27 to the traffic for this  
20 specific registration session. The protocol filters serve to bar this user from accessing other Internet services or sites other than the predetermined registration server 36. The RADIUS server also details the ISP, in this case an ISP at the access network operator, to connect to the UMTS access operator 33 and to the registration web server 36.

Next, in Step 7, the Layer 2 Tunneling Protocol Access Concentrator 28 in the Radio  
25 Network Controller 24 sets up, as shown by the dashed line 32 in FIG. 1, a communications tunnel to LNS 30 and waits for a PPP (point-to-point protocol)



connection request to come in. In step 8, the PC "dialer" software then proceeds to initiate a PPP session which is passed to the LNS via layer 2 tunneling protocol for authentication. In step 9, the LNS then terminates the various protocols used within PPP for setting up the connection and validates a dial-up "new user" user ID and password passed over the PPP. This involves a second query to the RADIUS server 34 represented by path 41.

In Step 10, once the dialer is connected to the personal computer, PC, via the PPP, the installation wizard activates the PC's web browser, which will then download a web page for registration from the Registration Web Server 36. Then, in step 11, the user is prompted to enter preferred user ID, password, credit card details, personal details, type of service required. A list of allowable ISPs supported by the Access Operator is provided as well as their specific registration software if required. Information on the types of service available is provided via the registration web page. In step 12, when the user has entered the appropriate data and "clicked to send" the information is sent to the registration server. In step 13 the registration server checks the information entered (including credit card authorization if required) and generates a permanent password. If the requested User ID has already been allocated the user will be provided with an option or requested to enter a new User ID. In step 14 the user is informed of successful registration via a web page downloaded from the Registration Web Server 36 that contains the user's name and permanent password, and the RADIUS server 34, is updated with the appropriate user information and the selected user name and password for wireless access. This is all saved on the PC for future use. Finally, in step 15, the registration Internet session is then terminated.

The user is now registered with the Access Operator, assuming credit checks have been successful, and normal internet wireless access can be requested with a new session.

In the case of the present invention, the new customer's User Equipment (UE) sends identifying information which is a 'new user' ID and 'new user' password when

requesting connection to the wireless access network. This is gained in a special anonymous connection. And, as discussed above, through protocol filters, the connection for registration can be suitably restricted.

5 Thus, customers may purchase their user equipment from a retail outlet. They will then connect their equipment to their personal computer and be able to use it to gain Internet access for the purpose of registering themselves and creating their account on-line. This user initiated registration is made possible by the use of the above-described wireless web-based Internet registration process.

**WHAT IS CLAIMED IS:**

1. A method of operating a cellular wireless Internet access system as part of an Internet Network including registration of new wireless Internet access customers/users having personal computers (PCs) where each user utilizes a portable user equipment typically with a directly attached antenna for communicating in a wireless manner on a cellular network with an integrated network controller, the method comprising the following steps:

the user acquires said user equipment along with magnetic storage means such as a CD having predetermined software and data for use in said registration;

connecting said terminal to said PC and installing the CD in the PC and allowing a wizard in said predetermined software to control the PC and its connected User Equipment;

under the direction of the wizard in the PC, the User Equipment is commanded to communicate in a wireless manner using an anonymous communications session which permits it to communicate only with a predetermined registration web server via authentication of a predefined temporary 'new user' ID and 'new user' password stored on the CD;

if properly connected, a point-to-point protocol (PPP) link is set up between the PC and its associated User Equipment and the registration web server, and then credit card, other personal details and type of service required are entered, the web server also having a list of allowable (Internet Service Providers) ISPs and if required their respective registration software for download;

if authorized by said registration web server, giving to the user a permanent User ID and a permanent password and providing said User ID and password to an access operator authentication server as part of the Internet network;

thereafter, allowing normal wireless Internet connections to a said allowable ISP for an Internet session which is authorized using customer information acquired by such registration.

2. A method as in claim 1 where said servers for said wireless Internet access system operate using the RADIUS standard, RADIUS being normally used in public switched telephone networks for dial-up Internet access.

3. A method as in claims 1 and 2 where portable wireless Internet users can register  
5 with a predetermined wireless Internet access operator without having to sign up for service via a retail outlet.

### ABSTRACT OF THE DISCLOSURE

Internet web technology is used to allow new wireless Internet customers to self register by providing an anonymous session connection on the wireless network between a special registration web server and the customers computer and associated wireless internet User

5 Equipment.

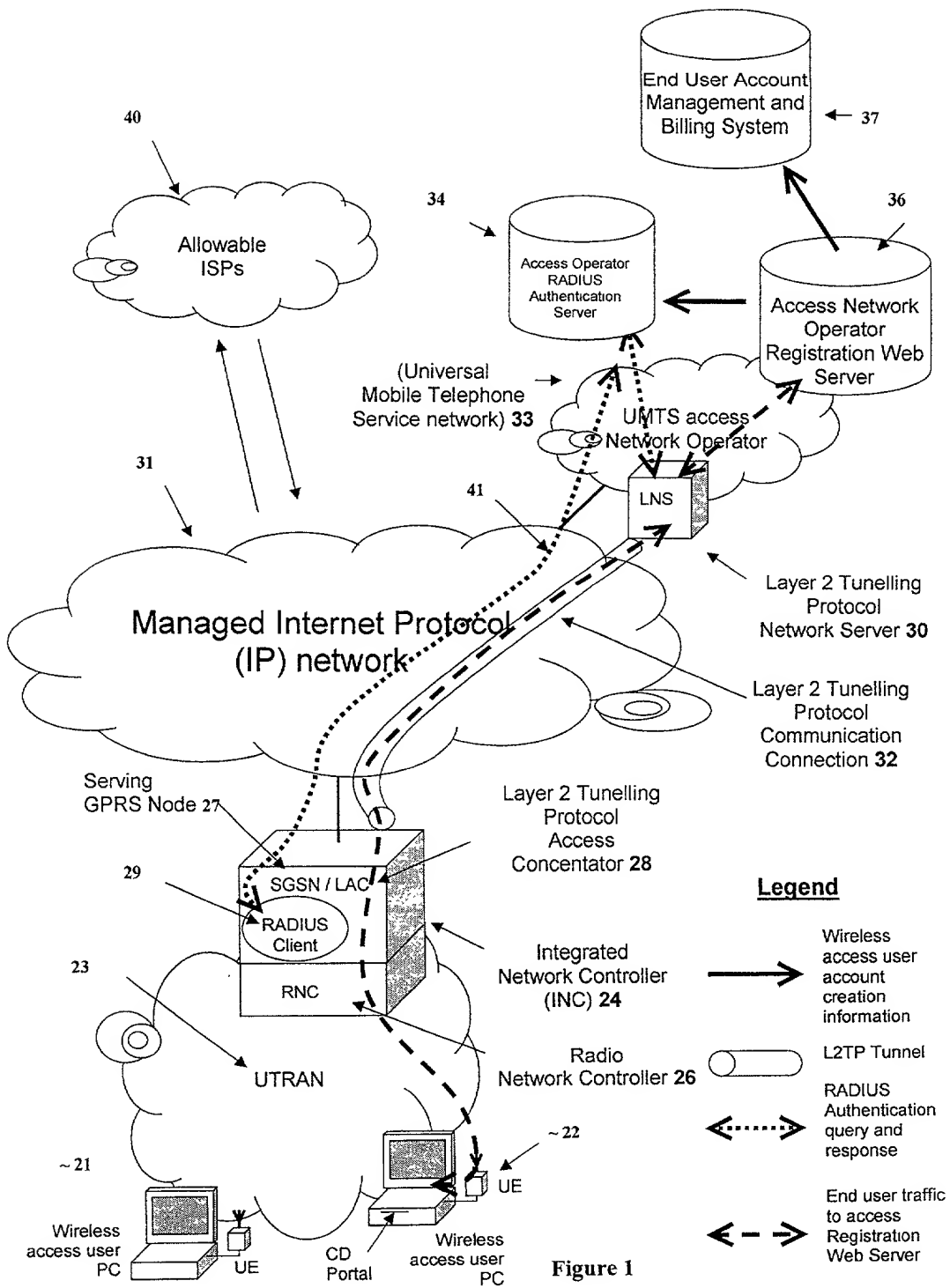
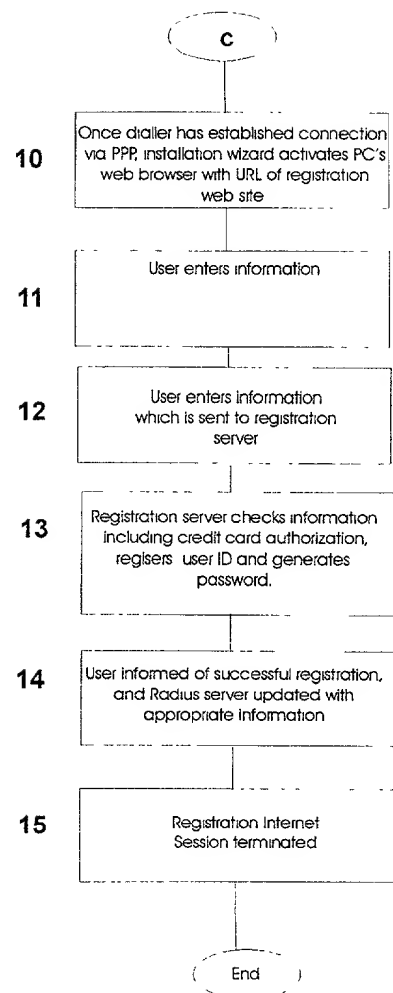
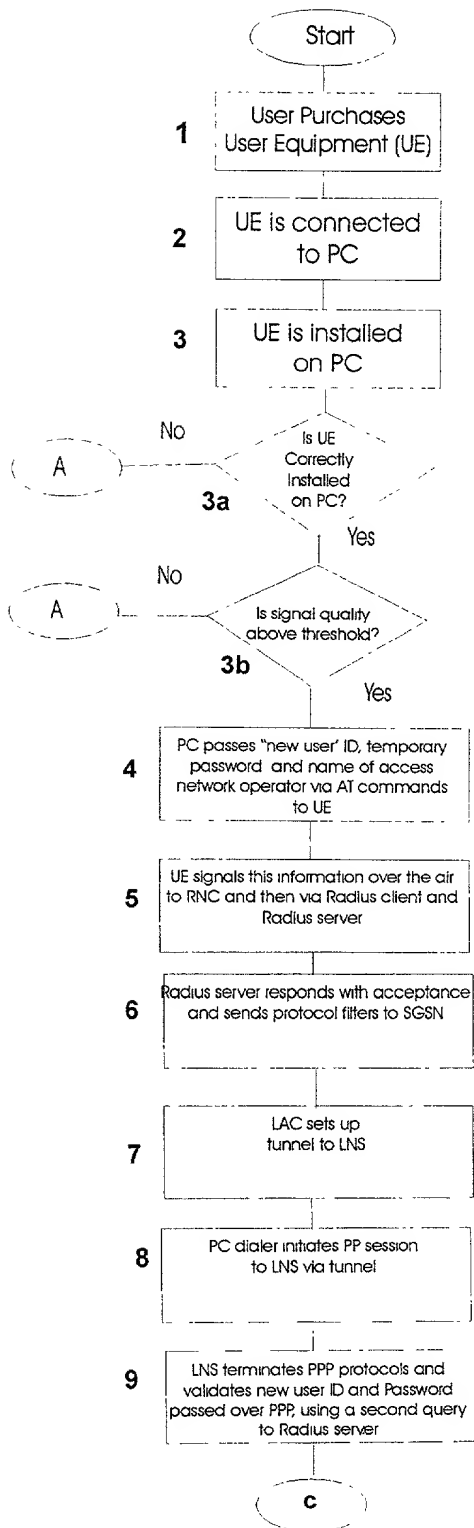


Figure 1



**Figure 2**

**DECLARATION AND POWER OF ATTORNEY  
FOR PATENT APPLICATION**

As a below-named inventor, I hereby declare that.

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS

the specification of which

(check one) ☒ was filed on \_\_\_\_\_ as  
☐ Application Serial No.  
and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in 37 C.F.R. 1.56

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in 37 C.F.R. 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

<u>09/432 824</u>	<u>November 2, 1999</u>	<u>Pending</u>
(Application Serial No.)	(Filing Date)	(Status)

(patented, pending, abandoned)

(Application Serial No.)	(Filing Date)	(Status)
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(patented, pending, abandoned)



I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Harold C. Hohbach, Reg. No. 17,757; Aldo J. Test, Reg. No. 18,048; Thomas O. Herbert, Reg. No. 18,612; Donald N. MacIntosh, Reg. No. 20,316; Edward S. Wright, Reg. No. 24,903; David J. Brezner, Reg. No. 24,774; Richard E. Backus, Reg. No. 22,701; James A. Sheridan, Reg. No. 25,435; Robert B. Chickering, Reg. No. 24,286; Richard F. Trecartin, Reg. No. 31,801; Steven F. Caserza, Reg. No. 29,780; Michael A. Kaufman, Reg. No. 32,988; Edward N. Bachand, Reg. No. 37,085; R. Michael Ananian, Reg. No. 35,050; Stephen M. Knauer, Reg. No. 38,208; Robin M. Silva, Reg. No. 38,304; David C. Ashby, Reg. No. 36,432; Maria S. Swiatek, Reg. No. 37,244; Dolly A. Vance, Reg. No. 39,054; Jerry G. Wright, Reg. No. 20,165; provided that if any one of said attorneys ceases being affiliated with the law firm of Flehr Hohbach Test Albritton & Herbert LLP as partner, employee or of counsel, such attorney's appointment as attorney and all powers derived therefrom shall terminate on the date such attorney ceases being so affiliated.

Direct all telephone calls to Jerry G. Wright at (415) 781-1989.

Address all correspondence to:

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San Francisco, California 94111

File No. A-68744/JGW

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code, §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's signature:



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Inventor's signature:



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**DECLARATION AND POWER OF ATTORNEY  
FOR PATENT APPLICATION**